under and the petioles allow drooping to occur. With the recurrence of thawing weather the blades expand and the leaf resumes its horizontal position. HANNIG[12] has found that the rolling of the leaf is due to a loss of imbibition water by the cell walls, and especially by the walls of the spongy parenchyma. The movements may be artificially induced by conditions which cause the cell walls to lose water and so allow a contraction of the walls to occur. The formation of ice, excessive transpiration, etc. are such conditions. The author is inclined to regard this as the first known instance of hygroscopic movements by living leaves. To the reviewer it seems that he has made a closer analysis of the cause of the movements, and his discovery consists in showing that while turgor variation is a prominent and accompanying feature, the real cause is the fluctuation in the content of imbibition water in the cell walls. It seems likely that many of the leaf movements which have hitherto been regarded as due to turgor changes may later be found to be caused by swelling and shrinkage of the cell walls. The author has not overlooked the fact that some leaves whose structure is apparently as well adapted to such movements as those of Rhododendron do not exhibit them.—RAYMOND H. POND.

Embryo sac of Nymphaea advena.—Miss SEATON[13] has examined the embryo sac of this species, giving an account of its earlier stages. Abundant material has enabled her to fill in some desirable details. The archesporium is distinguishable before the integuments begin to develop; and by division of the parietal cell and the epidermal cells the functioning megaspore becomes covered by a sterile nucellar cap six to ten cells deep. The sac develops a conspicuous tubular prolongation into the chalaza, and the fusion nucleus rests in the narrow connection between this chalazal haustorium and the broader micropylar portion of the sac. At the first division of this nucleus there is no wall (contrary to previous observation), and one of the daughter nuclei passes to the end of the chalazal tube. As before reported for the family, the proembryo is spherical and almost completely invested by endosperm. The monocotyledonous character of Nymphaeaceae is inferred, but no new evidence for it is advanced. This claim, which habitually accompanies the recent studies of Nymphaeaceae, is founded upon certain rigid preconceptions as to what constitutes a monocotyledon. It might be well for investigators of this group to try the effect of their work upon the rigidity of the old definitions.—J. M. C.

Araucarians of the Atlantic coastal plain.—BERRY[14] has called attention anew to the wide distribution of araucarians in the Mesozoic, especially as contrasted with their present very restricted range. A Mesozoic distribution of the

[12] HANNIG, E., Ueber hygroskopische Bewegungen lebender Blätter bei Eintritt von Frost und Tauwetter. Ber. Deutsch. Bot. Gesells. **26a**:151–166. 1908.

[13] SEATON, SARA, The development of the embryo sac of *Nymphaea advena*. Bull. Torr. Bot. Club **35**:283–289. *pls. 18, 19*. 1908.

[14] BERRY, EDWARD W., Some araucarian remains from the Atlantic coastal plain. Bull. Torr. Bot. Club **35**:249–260. *pls. 11–16*. 1908.